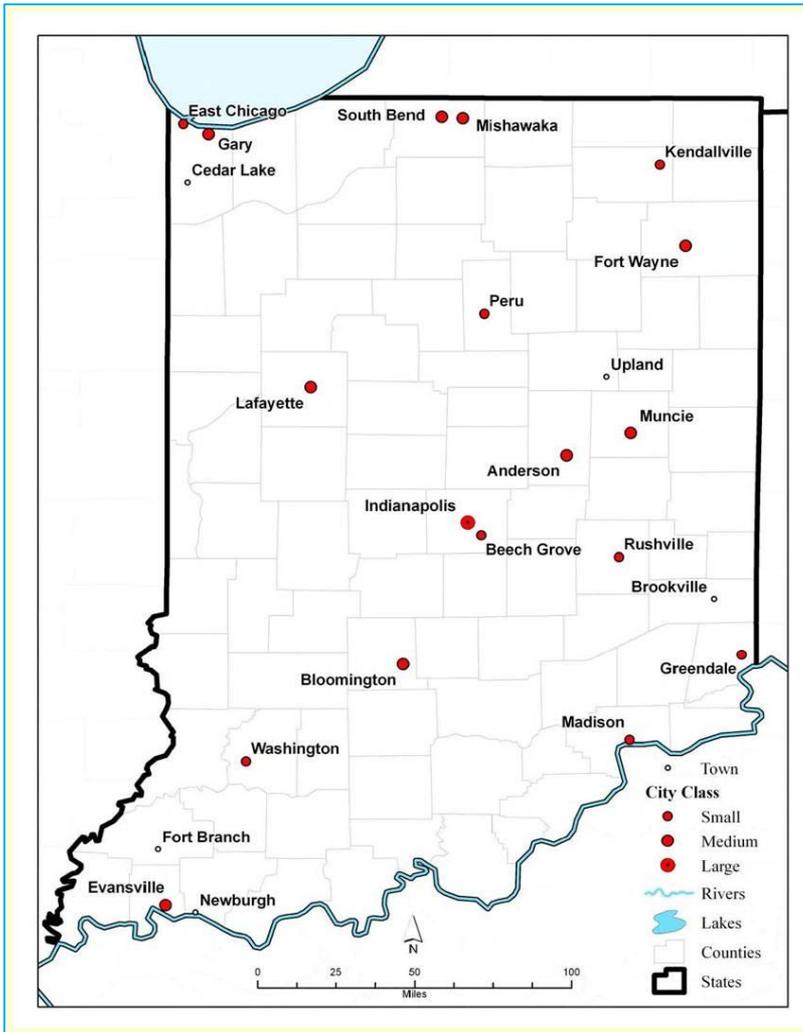




*The
Urban
Forest
Connection
to Water and Air Quality*

This presentation is made possible by the Indiana Department of Natural Resources, Community & Urban Forestry Program and the USDA Forest Service Northeastern Area





23 cities and towns

Each class city and towns represented

16 Sample street tree inventory

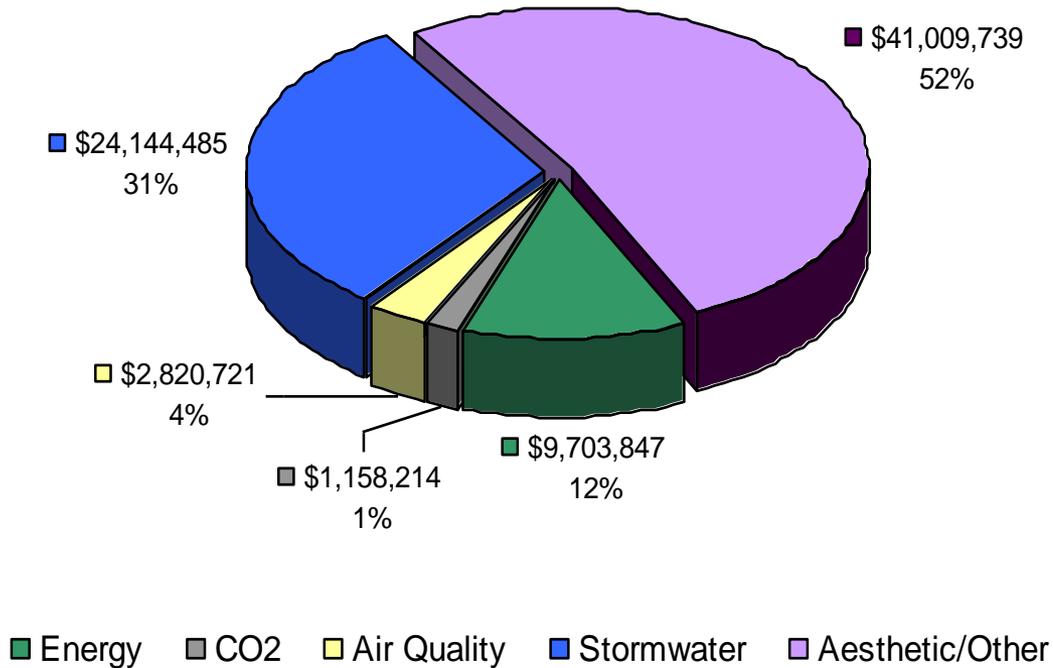
7 complete inventories

17,776 trees and vacant sites
271,317 sites from full inventory data

Result: data and analysis on 289,093 street trees in Indiana

Sample Urban Statewide Inventory SUSI

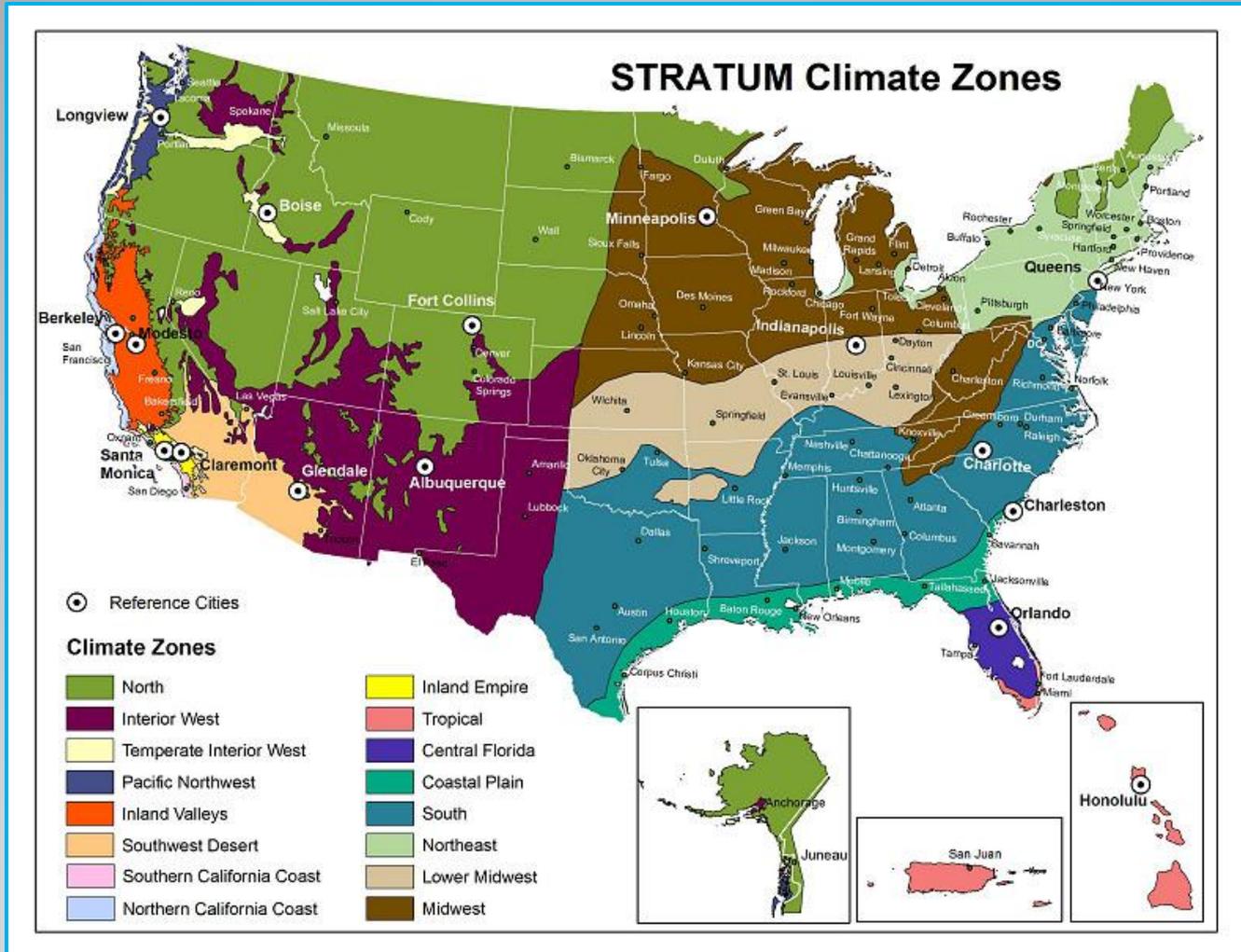
Figure 1. Estimated Statewide Benefits From Indiana's Street Trees



The Indiana urban forest is providing ecosystem service values of \$79,000,000

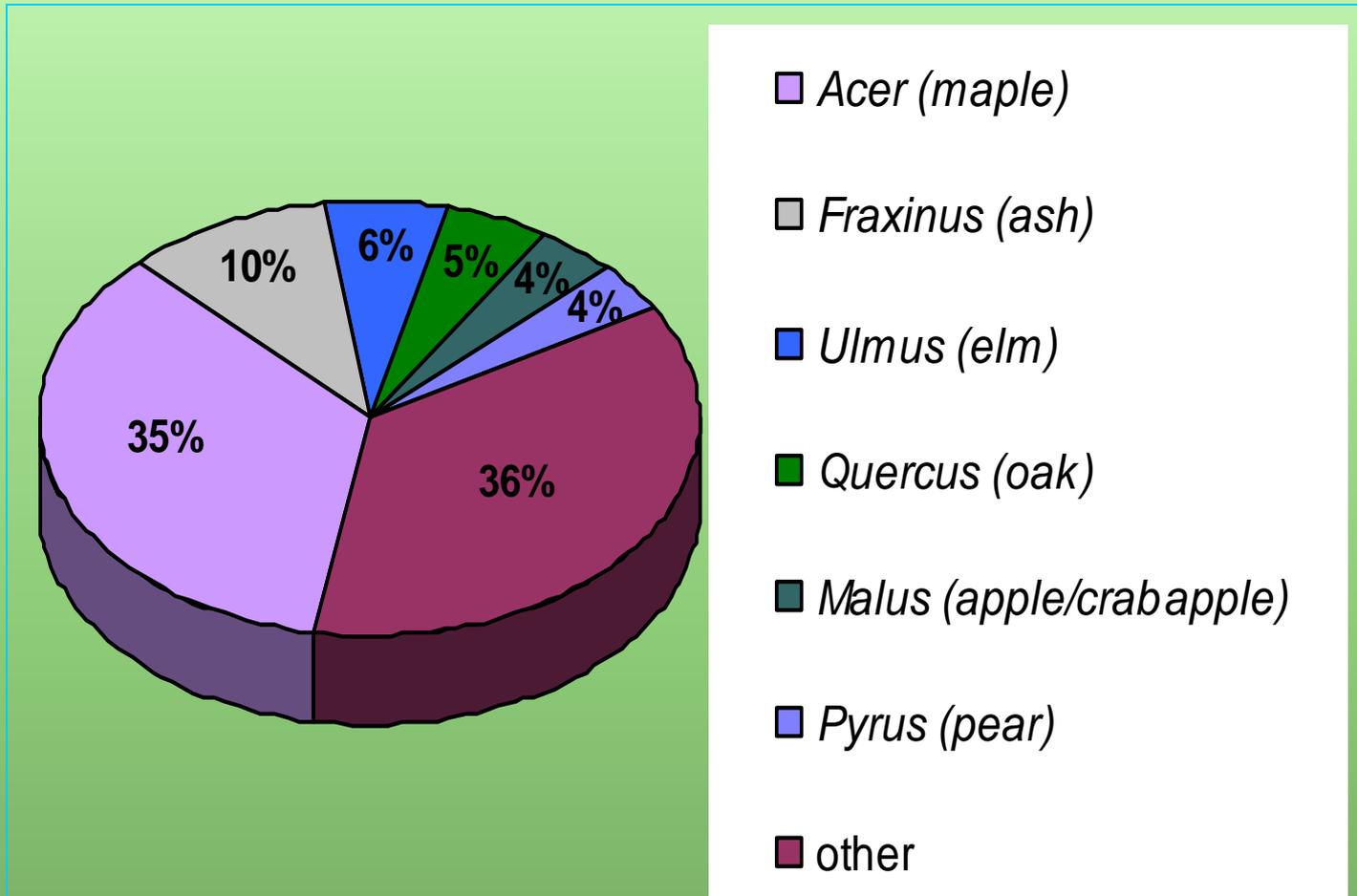
SUSI Results

BENEFITS



Reference City Climate Zones

MS4 Annual Conference May 2011



SUSI Top Species



SUSI data and analysis revealed that Indiana has over

850,000

Vacant

Tree

Spaces

What we need to address



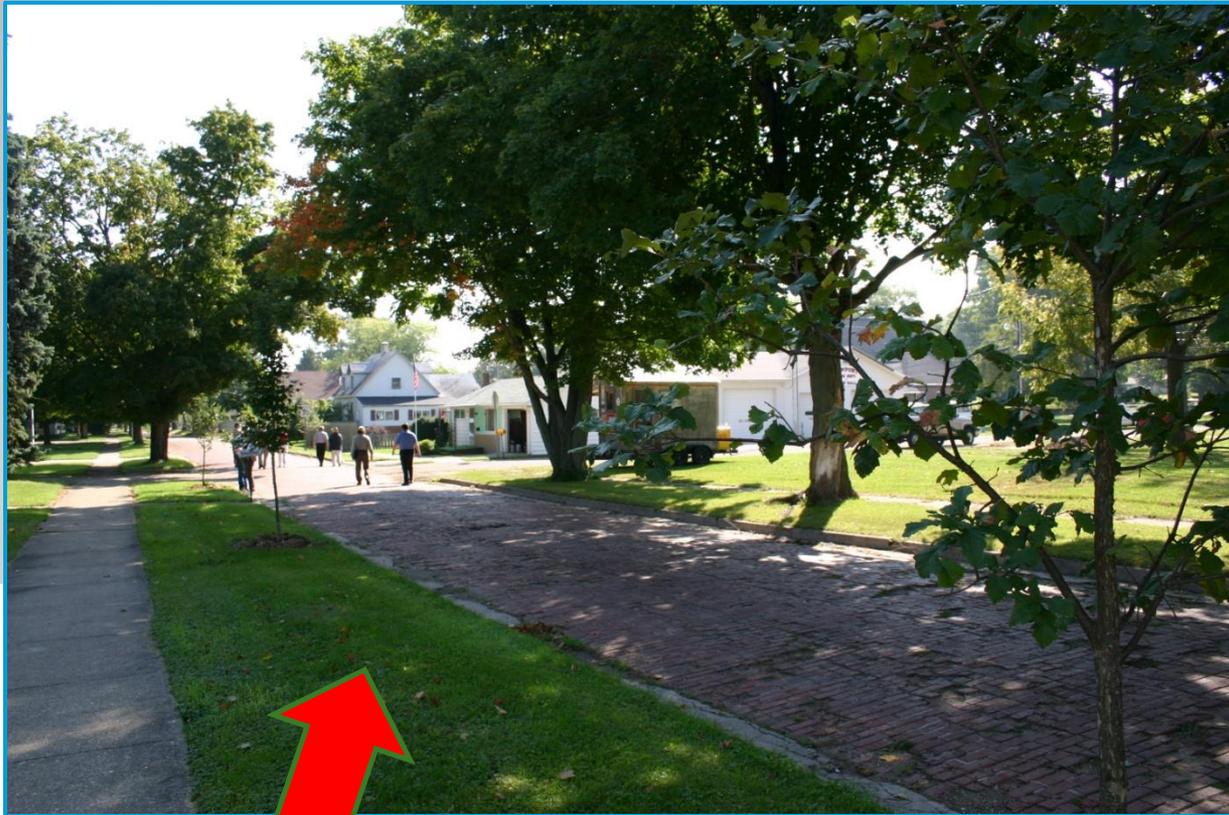
The canopy provides shade

The canopy reduces windspeeds

Street trees lower temperatures

Less dollars; less energy consumption; less use of fossil fuels.

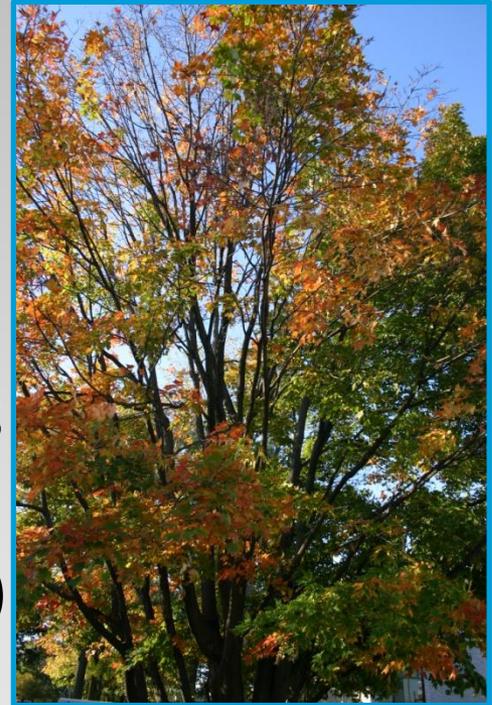
Energy Conservation



Vacant tree
space

What does the canopy do for us?

- Reduces stormwater runoff
- Provides shade
- Collects particulate matter
- Catches and traps pollutants
- Collects carbon dioxide (CO₂)



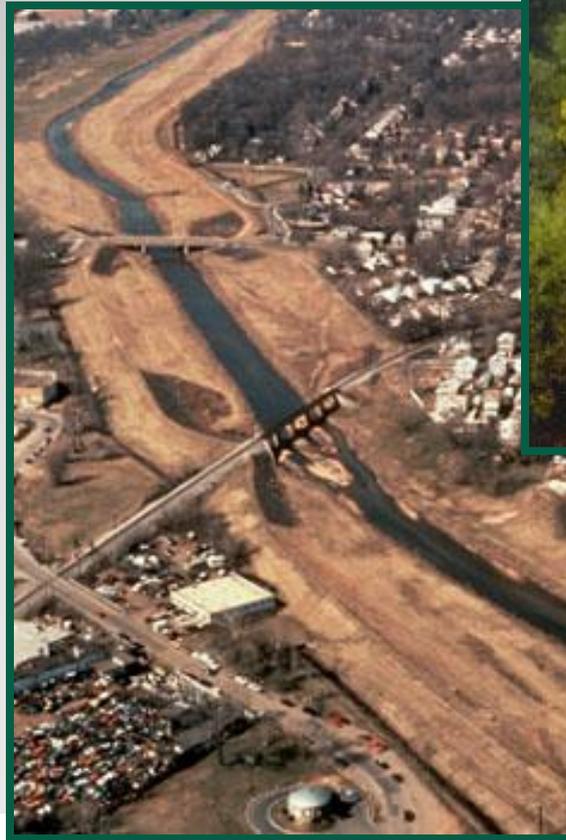
The leaves that make up the canopy have a job to do!

WATER

\$24,184,445

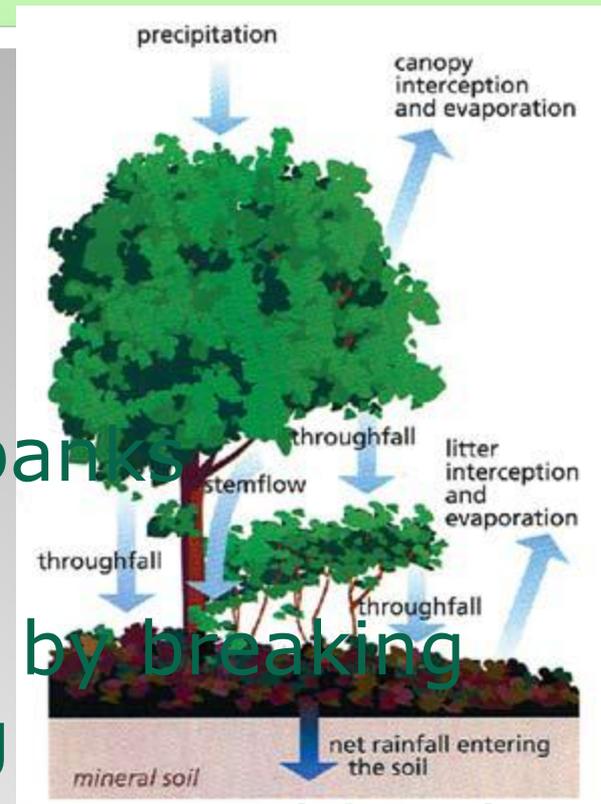
Healthy trees mean....cleaner water

Trees are the new technology to retain water—a typical community forest of 10,000 trees will retain approximately 10 million gallons of rain water per year.



HOW

- Slow stream flow
- Reduce erosion along stream banks
- Filter pollutants
- Improve soil and water quality by breaking down pollutants of urban living
- Provide healthy habitat for aquatic and land critters.
- Reduce temperature of storm water runoff





Leaves and branches intercept and store rainfall

Tree canopies reduce soil erosion

Transpiration through tree leaves reduces moisture...

Water quality improvements



16,630 Silver Maples INDY
ANNUALLY

Intercept: 67,629,664 gallons

\$ Value: \$25.22 per tree



6,073 Hackberries INDY
Annually

Intercept: 25,738,986 gallons

Value: \$21.66 annually per tree



5,827 Crabapples INDY
Annually

Intercept: 4,909,367 gallons

Value: \$5.22 per tree



Trees reduce and store CO₂

Trees absorb gaseous pollutants through LEAF SURFACE

They intercept dust, pollen, smoke

They release oxygen via photosynthesis

They lower air temp reducing O₃ levels

Reduce hydrocarbon emissions from parked cars THROUGH THE SHADE PROVIDED BY THEIR LEAVES

Clean Improve the air we breathe and the water we DRINK!



Intercept:
1,929 gallons of
stormwater runoff

Conserve:
285 kilowatt/hrs of
electricity

Reduce:
Consumption of oil or
natural gas by 39
therm(s)

Sequester:
754 lbs. of carbon

EACH YEAR

One of the 18" Hackberry, Maple, Oak,
Basswood, or Hickory trees in this
urban forest will...



Goals to improve water in urban areas:

Protect undeveloped urban and community forests.

Enhance the health, condition, and function of urban forest fragments

Reforest open land through active replanting or allowing natural regeneration to regain functions and benefits that the urban forests and rural forests provide for watershed health.

3 things cities and towns can do to increase green infrastructure

Technical assistance
Grants
Indiana Community
Tree Stewards
Basic Tree Care
Advanced Tree Care
Tree City USA
Tree Line USA
Tree Campus USA

Grants

- Great Lakes Basin
- Urban Forestry
- Canopy Restoration

Pam Louks
CUF Coordinator
ISA Certified Arborist



COMMUNITY & URBAN FORESTRY
TREE CITY- TREE LINE-TREE CAMPUS USA'S
RECOGNIZED FOR URBAN FORESTRY CARE
2010

ANDERSON
ANGOLA
AUBURN
AVON
BEDFORD
BEECH GROVE
BERNE
BLOOMINGTON
CARMEL
CHESTERTON
COLUMBIA CITY
CROWN POINT
CULVER
DECATUR
DYER
EAST CHICAGO
EDGEWOOD
EDINBURGH
ELKHART
EVANSVILLE
FISHERS
FORT WAYNE
FORTVILLE
FRANKLIN

FREMONT
GENEVA
GOSHEN
GREENCASTLE
GREENDALE
GREENFIELD
GRISSOM AIR
RESERVE BASE
HARTFORD CITY
HUNTINGTON
INDIANAPOLIS
KENDALLVILLE
LAFAYETTE
LAPORTE
MADISON
MERRILLVILLE
MICHIGAN CITY
MIDDLEBURY
MISHAWAKA
MONTPELIER
MOUNT AYR
MUNCIE
MUNSTER
NAPPANEE

NEW HARMONY
NOBLESVILLE
NORTH MANCHESTR
RENSELAER
RICHMOND
RISING SUN
ROCHESTER
RUSSIAVILLE
SALEM
SOUTH BEND
SYRACUSE
TERRE HAUTE
TIPTON
VALPARAISO
WAKARUSA
WEST LAFAYETTE
WESTFIELD
WHITING
WINAMAC
ZIONSVILLE



TREE LINE USA'S

*INDIANAPOLIS
POWER & LIGHT*

*MISHAWAKA
ELECTRIC UTILITY*

*NORTHERN INDIANA
PUBLIC SERVICE*

VECTREN ENERGY



TREE CAMPUS USA'S

*INDIANA UNIVERSITY
BLOOMINGTON*

*INDIANA STATE UNIVERSITY
TERRE HAUTE*

*PURDUE UNIVERSITY
WEST LAFAYETTE*

*VINCENNES UNIVERSITY
VINCENNES & JASPER*



References

- Lower Midwest Community Tree Guide
- Urban Watershed Forestry: Increasing Forest Cover, Conserving and Planting Trees at Development Sites, and Urban Tree Planting Guide
- Sample Urban Statewide Inventory for Indiana
- Indiana DNR, Division of Forestry, Community & Urban Forestry

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